

Measuring Household Usage of Financial Services

Does it Matter How or Whom You Ask?

Robert Cull
Kinnon Scott

The World Bank
Development Research Group
Finance and Private Sector Team
&
Poverty and Inequality Team
September 2009



Abstract

In recent years, the number of surveys of access to and use of financial services has multiplied, but little is known about whether the data generated are comparable across countries, or within the same country over time. This paper reports results from a randomized experiment in Ghana to test whether the identity of the respondent and the inclusion of product-specific cues in questions affect the reported rates of household usage of financial services. The analysis shows that rates of household usage are almost identical when the head reports on behalf of the household and when the rate is tabulated from a

full enumeration of household use. Randomly selected informants (i.e., non-heads of the household) provide a less complete summary of household use of financial services than the other two methods. The findings also show that for credit from formal institutions, informal sources of savings, and insurance, usage rates are higher when questions are asked about specific financial products rather than about the respondent's dealings with types of financial institutions. In short, who is asked the questions and the form in which they are asked both matter.

This paper—a product of the Finance and Private Sector Team, and the Poverty and Inequality Team, Development Research Group—is part of a larger effort in the department to understand household access to financial services and improving survey methods. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at rcull@worldbank.org and kscott1@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Measuring Household Usage of Financial Services: Does it Matter How or Whom You Ask?[°]

Robert Cull

Development Research Group, World Bank, Washington, D.C. 20433, USA

Kinnon Scott

Development Research Group, World Bank, Washington, D.C. 20433, USA

[°] We thank the Knowledge for Change program for providing funding for this project and Mircea Trandafir for excellent research assistance. We thank Asli Demirguc-Kunt, Pete Lanjouw, Jonathan Morduch, and Colin Xu for insightful comments. We also owe a large debt of gratitude to the survey team at the Ghana Statistical Service who were excellent colleagues without whom we could not have done this work. Finally, we should acknowledge that this project grew out of discussions between World Bank and FinMark staff about harmonizing survey approaches, and thus we thank Anjali Kumar, Norman Bradburn, Lorraine Ronchi, Adam Parsons, Mark Napier, Darrell Begin, Bob Curran, Anne Marie Chidzero and Karen Ellis for setting out the issues for us. The views expressed in this paper do not necessarily represent those of the World Bank, its Executive Directors, or the countries they represent.

1. Introduction

By now, the link between financial sector depth and economic growth has been well established.¹ Most studies in that line of research rely on aggregate measures of deposits in, and credit extended by, the formal financial system, predominantly through banks.² Because those measures, such as the ratio of credit extended to the private sector to GDP, do not provide information about the average size of a loan (or deposit), they provide an imperfect sense of the outreach of the financial sector. A highly concentrated banking sector, in which a small number of relatively wealthy depositors and borrowers were responsible for a large share of banking activity, could score comparatively well in terms of financial *depth* with limited *breadth* of outreach.

There are reasons to be concerned about breadth of outreach of the financial sector, especially in developing countries. As laid out in Levine (2005) and World Bank (2007), informational asymmetries, transactions costs, and contract enforcement costs lead to market imperfections that disproportionately disadvantage the poor, who tend to lack collateral, credit histories, and connections. And, in fact, recent papers have established a link between financial sector development and poverty alleviation (Beck, Demirguc-Kunt, and Levine, 2007; Clarke, Xu, and Zou, 2006; Honohan 2004). These results are consistent with the notion that the efficiency of resource allocation and growth are negatively affected by credit constraints that make it difficult for small-scale entrepreneurs to finance potentially high return investments (Galor and Zeira, 1993). Also consistent are recent experiments that find large returns on random injections of

¹ See Beck, Levine, and Loayza 2000; Levine 2005; Levine, Loayza, and Beck 2000; Levine and Zervos 1998; and Rajan and Zingales 1998.

² See Beck, Demirgüç-Kunt, and Levine 2000 for an overview of measures of financial sector depth and their construction.

capital to small entrepreneurs in developing countries (de Mel, McKenzie and Woodruff 2008, McKenzie and Woodruff 2008). Were credit constraints to be relieved, it appears that many currently poor entrepreneurs could repay their loans. Exclusion of the poor thus constrains the entry of new firms and limits the Schumpeterian process of creative destruction (Beck, Demirguc-Kunt, and Martinez Peria, 2007; Klapper, Laeven, and Rajan, 2006).

Perhaps the major reason why financial sector breadth has gone under-studied is the difficulty in collecting data.³ Whereas measures of financial depth can be derived from the balance sheets of financial institutions that already furnish this information to supervisors such as central banks, the same information is not readily available, and certainly not in a consistent form across countries, for financial sector breadth. Recent attempts to collect data on financial sector breadth have pushed beyond balance sheet information, using both demand- and supply-side approaches.

On the supply side, measures of the outreach of the financial sector often focus on the number of accounts of providers of financial services. For example, Beck, Demirguc-Kunt, and Martinez Peria (2007) collect information on the aggregate number of deposit and loan accounts from bank regulators in 99 countries. They also collect information on the number of bank branches and ATMs in each country as a proxy for physical access to financial services, even among those who do not actually use them. A limitation of those data is that they are derived only from information about banks, which, while important or even dominant providers of financial services in many countries, are not the full story. Honohan (2008) therefore combines the commercial bank accounts from Beck *et al.* with accounts at microfinance institutions (from Christen, Jayadeva, and Rosenberg, 2004)

³ See World Bank (2007) for a discussion.

and at savings banks that are members of World Savings Bank Institute (from Peachey and Roe, 2006) to produce the most comprehensive, though admittedly still rough, accounts-based estimates of access to date. While this represents a step forward, the accounts-based approach provides little information about the account holders themselves, and thus about the nature of financial exclusion in a given country.

A more satisfying, but costlier, approach is to interview users and potential users of financial services. These demand-side efforts to measure outreach are based on surveys of individuals and households. Broadly speaking, there are two approaches: (1) stand-alone surveys that focus only on access to financial services, which tend to be relatively expensive but produce rich data sets and a detailed portrait of access, and (2) a small module of questions on financial usage and access that is embedded within a larger survey that is designed to cover another topic (e.g., surveys of household expenditures or labor market participation) or multiple topics (as in the Livings Standards Measurement Surveys (hereafter, 'LSMS')). The marginal cost of the modules is much lower than that of stand-alone surveys, but they yield data that are much less rich.

To date, neither approach has produced comparable financial usage data at regular intervals that could be used to monitor the situation in a given country over time, or to compare outreach across a large number of countries. Because the stand-alone surveys are costly, they tend not to be repeated at regular intervals, and when a stand-alone financial survey is eventually repeated, there is no guarantee that the sampling frame and questions will be the same as in the previous survey, or that the same organization will deploy the survey. Because the modules of financial questions are placed within a survey designed for a different purpose, they tend not to be given high priority, and

comparability of data across surveys occurs largely by chance. A recent summary of the financial information generated in the LSMS shows that only a handful of basic questions about accounts and loans are asked in most modules, and even those are often asked in different ways, making the validity of comparisons across surveys dubious (Gasparini, et al. 2004).

While the accounts-based and survey-based measures of usage of financial services are not substitutes for one another, recent research has shown that there is a robust statistical link between the two (Beck, Demirguc-Kunt, and Martinez Peria 2007, Honohan 2008). That is, a regression model can be constructed from the more readily available accounts-based information that can be used to generate reasonably accurate estimates of the harder-to-collect survey based data. Still, the fit of those regressions is not perfect. For example, Honohan (2007) estimates that 16% of Ghanaians have an account, whereas the information derived from the surveys we describe below places that figure at 25%. At best, it would appear that the usage estimates derived from accounts-based information could be used to monitor access between surveys of users.

Scaling up collection of data on usage of financial services to ensure accuracy and comparability across countries and over time would therefore require a survey-based approach. While there have been other stand-alone efforts to measure usage, the most advanced current one is that by the FinMark Trust, which has deployed its FinScope survey (www.finscope.co.za) in a number of developing countries, primarily in Africa.⁴ Finscope surveys are designed to provide nationally representative information on individuals' use of financial services. The questions on usage are similar to those that might be found in a marketing study, including detailed inquiries about specific types of

⁴ The FinScope website lists ongoing or completed surveys for fourteen African countries and Pakistan.

financial products. These questions are also supplemented by others regarding the respondent's attitudes towards financial institutions, risk, and coping strategies in times of economic hardship, among other issues.

By contrast, the most comprehensive effort to use the modular approach to measure usage, the LSMS, tends to ask broad, generic questions about 'credit' or 'accounts' or dealings with types of institutions such as banks. Another important difference between the FinScope and LSMS approaches is that the LSMS finance modules track household usage of financial services, whereas FinScope randomly selects individuals from the population to provide information only on their own use.

In light of these differences in approach, the purpose of this paper is to provide evidence from a randomized experiment that tests whether measured usage of financial services is similar when respondents are asked detailed product-based questions (the FinScope approach) as opposed to more generic, institution-based questions (the LSMS approach). To foreshadow our results, the two approaches yield similar estimates for basic products such as savings accounts with banks or other formal providers, but not for others such as insurance or credit provided by banks and other institutions.

These comparisons are potentially important because the expense of stand-alone surveys makes it unlikely that they will be rolled out throughout the developing world any time soon. Our results provide guidance on the product- and institution-based questions that yield similar estimates of usage, and they suggest ways that generic, institutions-based questions used in finance modules could be modified to produce similar estimates of usage for products such as insurance and formal credit.

Regarding household usage of financial services, an important consideration is whether the identity of the survey respondent affects the accuracy of the information received. The most comprehensive approach to measuring household usage is a full enumeration, in which each member of the household reports on personal use of financial services and individual responses are then aggregated to the household level. Other approaches use an informant to provide information on the usage of financial services by all members of the household, typically either the head of household or a randomly selected adult. Another part of our experiment, therefore, tests whether the household financial usage information provided by the household head or a randomly selected informant is as accurate as that provided by a full enumeration. Because a full enumeration is more time consuming than reliance on an informant, these results will provide an indication of the services for which informants can provide reliable, cost-effective information.

While our main objective is to offer information on how question format and the identity of the informant affect the accuracy of financial usage information and its comparability across countries and over time, we also hope to provide information on the sustainability of data gathering efforts by offering evidence on the time costs associated with different questionnaires. Reliance on an informant and the use of institution-based questions cuts down on survey costs, and so evidence on the reliability of those types of questionnaires could help shape future plans. Also, although the FinScope approach focuses on individual usage, the results regarding informants can also speak to the feasibility of including a short module on household use of financial services in those surveys. In this way, the FinScope surveys could be used as a cost-effective vehicle for

gathering data on household use of financial services that could be compared with that gathered in other countries via LSMS modules or other non- FinScope stand-alone surveys.

We should acknowledge at the outset that we do not focus on the distinction between access to and use of financial services in what follows. Access, the possibility to use financial services, and the actual use of financial services do not overlap perfectly, though both concepts are relevant to a discussion of financial sector outreach. Although our survey does have a series of questions on why respondents do not use financial services, and thus we do have information on voluntary exclusion from participation in the formal financial sector, we do not focus on that information in this paper. Rather, we conduct a methodological experiment about reported usage of financial services.

The rest of the paper is organized as follows. Section 2 describes the design of our experiment, while section 3 compares the characteristics of our sample with that of the full Ghana LSMS -- we re-visited only a subset of those households, though our sample was designed to be nationally representative. We also compare sample characteristics across treatment groups. Section 4 reports usage rates across financial products for product- versus institution-based questions and household usage rates provided via full enumeration versus an informant. In section 5, we introduce regressions to test whether certain types of individuals and households are responsible for the under-reporting of access that we find for some questionnaire formats in section 4. Section 6 offers concluding remarks.

2. The Design of the Experiment

Household surveys vary across multiple dimensions. The decisions on content, respondent, interviewers, timing and the like are driven by a combination of data needs, cost considerations, assessments of each household member's knowledge and willingness to respond and sampling strategies. There are tradeoffs involved: greater detail in questions may aid recall but this boost to data quality and comprehensiveness can be counteracted by respondent fatigue arising from interview length. High field costs can be minimized by using proxy respondents but this may decrease data quality and, thus, may not actually represent cost savings at all. To provide some insights into the tradeoffs involved in the area of collection financial data in household surveys, we developed an experiment to test whether reported use of financial services is affected by either the choice of respondent or the format in which questions on financial services are posed.

Respondents selected to provide financial service use data in surveys are very often the head of household (however defined). This person is asked to provide information on household use of loans and savings and, more rarely, insurance. This is the way that Living Standards Measurement Study (LSMS) surveys were typically carried out. However, there are concerns that not all individual financial service use in the household is known to the head of household and thus, the data collected in this manner may understate overall use of services and, perhaps underestimate specific types of services or use by certain categories of household members. Reviews of both savings and credit issues in LSMS surveys recommended the alternative method of using direct informants to collect savings and credit behavior (Kochar, 2000; Scott, 2000). In this way, data are collected from all adults in the household about their own use. Several

subsequent LSMS have addressed several of these issues (Bosnia and Herzegovina 2001, Panama 2003 and 2008 for example⁵).

It may be, as is the case in the FINMARK surveys, that a third option for respondent selection arises. In these surveys, a random adult is selected to be interviewed. This is a strategy to ensure that the pool of respondents is a probability sample of all adults in the country: a sample of household heads would be inappropriate for this purpose. Although FINMARK surveys do not presently collect household financial service data, if there were an interest in doing so, logistically it would be easiest to have the randomly selected adult--already being interviewed-- provide financial data for the household. Of concern would be whether this strategy would provide data of similar quality to that garnered from full enumeration of adults or even selecting the head of household to provide the information. It is not clear, a priori, that every individual in the household will be equally well informed about other members' involvement with the financial sector.

A second key dimension on which surveys vary is the way in which questions are asked. For ease of implementation, lower costs, and low respondent burden, a short set of questions that aggregate individual items into more global questions is preferred. However, research in other areas has shown that such questions may lead to accidental omissions or memory lapses, thus lowering reported incidence or use. Experiments in measuring household consumption have shown that including a greater number of items in the questionnaire leads to higher reported consumption (Joliffe, 2001; Pradhan, 2001; Steele, 1998 and STATIN, 1994). As importantly, in consumption measurement at least,

⁵ See <http://worldbank.org/lsms> for details of these surveys.

aggregation affects certain types of consumption more than others and can lead to re-ranking of households on overall consumption (Joliffe, 2001).

For financial service use questions, the most disaggregated level would be to ask respondents about each and every service available, from ATM cards to health insurance, to informal saving associations to formal bank loans. This is the approach taken in the FINMARK surveys. Such an approach should prevent accidental omission of service use. It does, however, increase the burden of the interview which can lead to lower data quality. It also may preclude other surveys from addressing financial service use as there simply is not ‘space’ in the interview for so many questions.

The opposite approach, more similar to that taken by LSMS surveys, is to ask about financial service use at an aggregate level with a focus more on relationships with types of financial service providers than the specific products used. Clearly this approach is simpler and less expensive to implement. The concern is whether, as with consumption, certain types of items might be omitted. This may be of particular concern in terms of financial services given the heterogeneity of knowledge of financial instruments in the population. If there is more room for misunderstanding among respondents, it may lead to greater under-reporting.

The experiment carried out in Ghana explicitly tests the effect on reported financial service use of changing the respondent and changing the set of questions asked. In order to develop and implement the experiment, we worked with the national statistical office of Ghana (Ghana Statistical Service (GSS)). The GSS carries out a series of national household surveys and other statistical activities. The most comprehensive of household surveys, the Ghana Living Standards Survey (GLSS), is an LSMS survey

designed to provide information on multiple aspects of living conditions: human capital, productive activities, consumption, and access to and use of public services, *inter alia*. The survey uses a national probability sample of households stratified by region and urban/rural areas developed to present results at the level of the three ecological zones of the country (GSS, 2006). The survey has been implemented five times in the country since the 1980s with the most recent one carried out in 2005-06.

This last GLSS5 presented us with a significant opportunity. Research experiments are usually constrained by how much information can be collected in one questionnaire. However, by re-visiting a sub-sample of the GLSS5 households, we were able to take advantage of the information already collected. This freed many constraints on the experiment survey. More data could be collected on financial issues in the Financial Service Survey (FSS) as questionnaire space was not needed for gathering data on other characteristics of the household or individuals. Additionally, a more complex design was possible as interviewers only needed to be trained on financial questions and data collection. And, more risks could be taken as the government's national survey was in no way at risk from the work: the GLSS5 is not a panel survey so any effect of the FSS on households' willingness to respond to future surveys or specific answers to questions would not be affected by the experimental work.

The original framework for the experiment was a three by two matrix, three types of respondents (head, randomly selected adult and full enumeration) and two types of questionnaires (product-based and institution-based). Designing a survey that would allow all of the potential comparisons and that would isolate the different effects stemming from changing respondents and questionnaire types proved to be too complex

if we wished to ensure quality in the fieldwork. A simplified, and more feasible, design was drawn up that still allows us to make basic comparisons. These comparisons focus on two issues. The first is the quality of household usage information provided by informants versus a full enumeration. The second issue is data quality obtained using a product-based questionnaire versus an institution-based one.

Physically, three different questionnaires were fielded with the second and third questionnaires containing more than one treatment (see Table 1). Once the sample design was complete, households were randomly assigned to one of three groups. Each of these groups of households were administered a different questionnaire. This selection was made by GSS staff in headquarters. In households where one of the treatments was for a randomly selected adult to be interviewed, interviewers used Kish tables to make that selection in the field. Only individuals aged 15 or older were included in the full enumeration or were selected as random respondents.

The GLSS5 households included in the FSS were taken from the two interviewing cycles of the GLSS5 closest in time to the fielding of the experiment. This was done to minimize the chances that a household might have changed significantly between the time of the GLSS5 and the FSS: we rely on the GLSS5 data for non-financial household and individual information. The selected enumeration areas (and households) were distributed throughout the country (see Table 2).

The questionnaires were developed in close collaboration with the GSS. In addition to their own experiences in other surveys, the GSS called upon various experts and sources in the country to determine the comprehensive list of financial services that existed and the range of service providers. The GSS staff also worked to determine the

best terminology and how to minimize translation problems. Training materials and the training of interviewers was done by the GSS. The instruments were piloted and revised and the actual survey took place from October –December 2006.

3. A Description of the Data

The financial experiment is the most useful if its results can be extrapolated to the entire population and not just those households included in the survey. Every effort was made to ensure that this would be the case. The GLSS 5 is based on a probability sample and we used a randomly selected sub-sample of these households which should be adequate. However, since the FSS is, essentially a panel, it is important to determine whether or not there is panel attrition of significance. And, given that in the final stage, households were randomly assigned to one of three groups with each being administered a different questionnaire (and treatments), there is also potential for problems to have arisen. In principal we expect the basic characteristics of households in the FSS to match those in the GLSS 5 and for there to be no significant differences among the three groups of households administered the different FSS questionnaires. This section reviews the resulting data to identify issues that arose in the practice of the survey's implementation.

As shown in column 1 of Table 3, more households in Ghana as a whole live in rural areas than urban, and over 65 percent of households have members working in agriculture. Less than one-fifth of households have members working as employees of firms. The population is young with the average age being only 20.

Household size is slightly more than 4 persons. Surprisingly perhaps, given the large agrarian base and rural population, most households are composed of nuclear

families. Heads of households are female in slightly more than one-quarter of all households and while only 48 percent of household heads are literate, more than 60 percent are numerate.

Column (2) of the table shows the characteristic of the FSS households. The final column shows the t-statistic and p value for the test of comparison of means of the two samples.⁶ Note that for variables related to location, the FSS sample seems to deviate from that of the GLSS by being more rural, having more households engaged in agriculture and being more likely to be located in the Coastal and Forest Zones of the country. We hypothesize that this resulted from using simple random sampling of enumeration areas for the FSS. This fails to take into account the greater population found in urban enumeration areas that was captured in the original probability proportional to size sample. Fortunately, the effects are not strong, but it should be remembered that the sample here somewhat over-represents the rural population.

Between the time that households were interviewed for the GLSS 5 and when re-interviews of these households were attempted for the FSS, some households had moved or dissolved and could not be re-interviewed. Others chose not to respond. Of the 2291 households re-visited, a total of 335 could not be re-interviewed.⁷ If attrition between the two interviews is randomly distributed there is no effect on the experiment other than cost. However, systematic differences that might exist between the households that could and could not be re-interviewed could be problematic.

⁶ Due to revisions to the PSU codes in the GLSS 5 after the final FSS data set was produced it was not possible to use the GLSS5 sampling weights in the analysis.

⁷ Fifty percent of the non-response was due to vacant dwellings (either permanent or temporary) and 40 percent because the household had moved. Actual refusals represented less than 3 percent of all non-response.

To explore this issue we ran a probit model where the dependent variable takes on the value of one if the household was not re-interviewed and zero otherwise. The results are shown in Table 4. We find that, as one might expect, rural households were less likely to be lost between rounds. In all likelihood this reflects the lower mobility of rural households compared to their urban counterparts. Additionally, households with younger heads are more likely to have not been re-interviewed. Again, these may be more mobile households. Finally, households with heads working at the time of the GLSS 5 were slightly more likely to be re-interviewed. One can perhaps, speculate that this job status lent some stability to the household or decreased mobility. In sum, there is some evidence that the actual sample of households in the FSS under-represents more mobile households although the effect is not large. This small tendency for urban households to not be re-interviewed reinforces the slight bias towards rural households that arose from the original selection of enumeration areas for the FSS. This needs to be kept in mind when drawing conclusions from the data.

Finally we look at the results of the allocation of households to the different questionnaire groups. Comparing the means of key variables across the three groups (Table 5) is reassuring on this point. The only area of concern might be that Group 2 has a slightly smaller household size than the other two groups, on the order of .25 people less per households. While the difference is statistically significant it is small and, even though the treatment administered to Group 2 was full enumeration, it is not clear if this will have any effect on the results.

4. Basic Comparisons across Treatments

We calculate seven different indicators of the use of financial services. For the institution-based questions that we ask of a household informant (either the head of household or a randomly selected adult that is not the head), the seven indicators and the survey questions from which they derive are as follows:

1. *Banked*: Some people like to keep their money in an account with a bank. Do you or any member of your household have a bank account?
2. *Indirect access to an account*: Do you or other members of your household perform banking transactions using someone else's account?
3. *Formal non-bank savings*: Now think of all the ways that you and members of your household save money. We are not talking about investing in a business or buying land, but only about where you or other household members put their money to use later. Have you or anyone in your household used an institution such as a credit union or a savings association to save money in the past 12 months?
4. *Formal credit*: Many people borrow money to buy things on credit. Have you or any other member of your household used an institution such as a credit union, savings association or bank to borrow money or to buy on credit in the past 12 months?
5. *Informal savings*: Have you or any other household member used a Susu⁸, welfare scheme or other savings club to save money in the past 12 months?
6. *Informal credit*: Have you or any member of your household used a Susu, welfare scheme, or savings club to borrow money in the past 12 months?
7. *Insurance*: Many people insure themselves and their possessions against unexpected circumstances. Have you or any member of your household used an institution to insure yourselves (life, health) or property (household goods, house, vehicle and the like) in the past 12 months? That is, do you or anyone in the household have any long or short term insurance policies with any institution?

⁸ For a small fee, Susu collectors provide an informal means for Ghanaians to securely save and access their own money, and gain some limited access to microcredit. Money placed with a Susu collector is held in a Susu account.

For the full enumeration treatments, we ask the same questions, but with respect to individual use. For example, for the *banked* indicator, we ask simply: “Do you have a bank account?” Responses are aggregated across all members of the household to arrive at our measure of household usage. In other words, if one member of the household reports having a bank account, then the whole household is considered banked for the full enumeration treatments.

There is an element of subjectivity that went into the crafting of these questions, and one might worry that slight tinkering with the institution-based questions could increase reported levels of usage. While we recognize this possibility, we worked extensively with staff at the Ghana Statistical Service to adapt these questions to the country context and we did extensive piloting of these questions (both at GSS and in the field) to make sure that the questions were well understood by respondents. We are confident, therefore, that these questions represent a reasonable and fair attempt to gather data on usage of financial services in Ghana via institution-based questions. Moreover, in our first set of comparisons between full enumerations and informants, all respondents were asked the same questions. While the usage levels might be affected by the specifics of those questions, the differences in the data generated by a full enumeration versus the informants are much less likely to be affected.

For informants and the full enumeration, Table 6 reports the percentage of households that use a financial service for each of our seven indicators. For five of the seven indicators – *banked*, *indirect access*, *formal non-bank savings*, *informal savings*, and *informal credit* – household usage rates are almost identical when the head of household is the informant or when a full enumeration is undertaken. For *formal credit*,

usage rates reported by the head of household are slightly higher than those from the full enumeration treatments, though we cannot reject the hypothesis that the two rates are equal to one another. In all, however, the head of household reports information that is very similar to that generated by full enumeration.

This is good news because interviewing only the head is much cheaper than interviewing all adult members of a household, an issue we will return to below.

However, some surveys with a financial services module, such as labor force participation surveys, are designed to interview all members of a household. Our results provide good news in those cases, too, in that the information generated via the full enumeration appears to be a reasonable substitute for that generated by the head of household. Because the household usage rates calculated from responses to institution-based questions are comparable using either method, there is potential to expand comparisons across a much broader set of countries.

In contrast, a randomly selected adult from the household (who is not the head) does not provide information that is comparable to that generated by the head or via full enumeration. Randomly selected informants produce usage rates that are lower than those for the other two methods, and significantly lower for *banked*, *indirect access*, and *formal credit*. This pattern suggests that the random informant has substantially less knowledge about household use of financial services than does the head of household. We also note that the disparities are greatest for services provided by formal institutions. For both *informal savings* and *informal credit*, the usage rates produced by random informants are almost identical to those produced by the head of household or via full enumeration. This

could be because many of the informal savings and credit arrangements revolve around social activities (meetings) that all household members know about.

Although the head of household and the full enumeration tend to yield very similar usage rates, there is one exception, *insurance*. One would expect that the full enumeration would provide the most complete information and thus produce the highest usage levels. And yet, the percentage of households that have insurance is 11.3% when information is provided by the head of household and only 7.9% when a full enumeration of individual usage is collected. It is conceivable that the head of household has purchased insurance for other household members of which those members are not aware. Another issue, which we turn to in more detail below, is that the institution-based question is a poor method of collecting information on insurance use, and thus none of the estimates for that indicator are reliable in Table 6.⁹

Comparisons between usage rates calculated from product- versus institution-based questions also reveal stark differences across indicators. To calculate product-based questions, we relied on a series of questions that are similar to those used in FinScope surveys. For example, a respondent was considered *banked* if she responded yes to any of the following questions:

1. Do you currently have an ATM card?
2. Do you currently have a debit card?
3. Do you currently have a Savings Plus account?¹⁰
4. Do you currently have a current account (checking)?
5. Do you currently have a savings account at a bank?
6. Do you currently have a PostBank account or a post office savings account?

⁹ Recall that the head of household is only asked about his or her own personal use of insurance products in the full enumerations, and thus it is possible that the full enumeration could yield a smaller average usage rate than when the head responds on behalf of the household for the reason mentioned. However, having observed the field training, our sense is that institution-based question is simply not a good method for collecting reliable information about insurance use.

¹⁰ This is the brand name of a specialized savings account offered by some Ghanaian banks with additional features such as limited checking.

7. Do you currently have a bank loan?
8. Do you currently have a bank overdraft facility?

The questions underlying each of the indicators appear in Appendix A. Note that there is not a product-based indicator for *indirect access* since there was only one question on that topic and it was asked in the same way in both the product-based and institution-based questionnaires. That indicator is therefore dropped from subsequent tables.

We focus on individual use of financial services so as not to conflate the effects of the method of eliciting household usage information (informant versus full enumeration) with the effects of asking product versus institution-based questions. And again, while we acknowledge some degree of subjectivity in selecting the questions underlying our product-based indicators of usage, we made a concerted effort to adapt those questions to the country context. We also selected from the questions that have been used in past FinScope surveys. We hope, therefore, that this constitutes a fair test of the importance of asking product-based questions in the sense that it represents well the most advanced surveys undertaken to date.

Table 7 shows that the product- and institution-based questions produce very similar usage percentages for basic services, such as *banked* and *formal non-bank saving*. The same is also true for *informal credit*, suggesting that respondents understand well the meaning of informal credit without needing to be cued about specific types of arrangements. By contrast, the product-based questions yield much higher usage percentages than do the institution-based questions for *formal credit* (2.8% vs. 0.8%), *informal savings* (18.8% vs. 8.9%), and *insurance* (18.4% vs. 5.7%), and all of those

differences are statistically significant. For these, arguably more complex financial services, product-related cues appear to produce a much more complete picture of usage.

We would expect that, by definition, the level of individual use of financial services could not exceed the level of household use. Comparing Tables 6 and 7, we can see that this is true for all services except for insurance. For that indicator the individual usage rate based on product-related questions far exceeds the household usage rate calculated from the institution-based question. We take this as a clear sign that our institutional insurance question is not a good substitute for a series of product-related questions.

Nor does the problem appear to stem from the financial knowledge of the respondent. We would presume that the head of household is likely to be the most financially knowledgeable member of the family, but even when the head is asked about his own personal use of insurance products, the product-based usage rate is much higher than the institution-based measure (Table 8). A similar pattern holds true for *formal credit* and *informal savings*, for both household heads and for non-heads, and the differences between the product- and institution-based usage rates are statistically significant. The evidence in Table 8 points to across-the-board difficulties for all respondents with using institution-based questions to gather information on formal credit, informal savings, and insurance.

In summary, the preliminary comparisons across treatment groups indicate that the identity of the respondent and the way questions are asked does affect reported usage of some financial services. Full enumerations of all household members produce usage rates similar to those reported by the head of household, while interviewing a randomly

selected non-head produces much lower levels of household usage. Product-related cues appear to be important to gain a full understanding of usage of insurance, formal credit, and informal savings, but do not appear necessary for more basic services such as bank accounts, formal savings, and informal credit.

5. Regressions

In this section, we test whether the differences across treatments described in the previous section hold up when we control for other factors that could affect usage in regressions. Some of those regressions are also designed to identify the characteristics of the individuals and households that reported lower levels of usage for institution-based versus product-based questions. Another set of regressions examines the household characteristics of the randomly selected informants who reported lower household usage rates than those obtained from the head of household or the full enumeration of individual usage. In this way, we hope to identify the types of respondents that have difficulty with certain question formats.

a. Household Usage: Full Enumeration vs. Informants

To describe household usage of financial services, we use the following specification, which we estimate via probit:

$$\begin{aligned} Finance_i = & \alpha \\ & + \beta_1 \text{ Age}_i \\ & + \beta_2 \text{ Rural}_i \\ & + \beta_3 \text{ Size}_i \\ & + \beta_4 \text{ Dependent Share}_i \\ & + \beta_5 \text{ Age of Head of HH}_i \\ & + \beta_6 \text{ Highest Grade, Head}_i \\ & + \beta_7 \text{ HH Head Numerate}_i \\ & + \beta_8 \text{ Share of Agricultural Workers}_i \\ & + \beta_9 \text{ Share Employed}_i \\ & + \beta_{10} \text{ Share Self-employed}_i \\ & + \beta_{11} \text{ Informant is HH Head}_i \end{aligned}$$

$$+\beta_{12} \text{ Random Informant}_i \\ +\varepsilon_i$$

Finance is one of the seven indicators of household use of financial services described in Section 4 (*banked, indirect access, non-bank saving, informal saving, formal credit, informal credit, and insurance*). All of those indicators are dummy variables equal to 1 if any member of household *i* uses that service.

The control variables in the regression are:

Age, which is the average age of all members of the household. Other factors equal, older individuals (and households) might have more experience with use of financial services.

Rural, which is a dummy variable equal to one if the household is located in a rural area. We expect usage of financial services to be more modest in rural areas because of the relatively high costs of providing services to those areas.

Size, which is the number of individuals living in the household. We expect the likelihood that someone in the household uses a financial service to be increasing in household size. Also, larger households might demand some financial services more intensely than smaller ones.

Dependent Share, which is the percentage of household members that are age 18 or below or above age 60. Controlling for the size of the household, we expect a higher share of dependents to be associated with lower usage rates, because these individuals are unlikely to have demand for financial services.

Age of HH head, which is the age of the head of the household in years. Older household heads might have more experience with use of financial services, and that experience might be passed onto to other members of the household.

Highest Grade, Head, which is the number of grades completed by the head of household. Better educated household heads are more likely to use financial services, and that experience might also be passed from the head to other household members.

HH head numerate, which is a dummy variable equal to one if the head of the household is able to perform simple numerical calculations. Like the completed grades variable, numerate heads are themselves more likely to use financial services and to pass that experience on to other household members.

Share in Agriculture, which is the share of household members that work in agricultural activities. Agricultural workers might have different financial needs than others.

Share Employed, which is the share of household members that are currently working. Because the employed are likely to have greater need of financial services, we expect this variable to be positively associated with household usage rates.

Share Self-employed, which is the share of household members that are currently self-employed. Self-employed workers might have different financial needs than others. Also, lacking a verifiable regular salary self-employed individuals, especially those working in small informal establishments, might find it difficult to obtain financial services from formal providers.

HH head, informant, which is a dummy variable equal to one if the head reported on the household's use of financial services.

Random informant, which is a dummy equal to one if a randomly selected adult other than the head of household was selected to report on household use of financial services.

The informant dummy variables therefore capture the effects on reported household usage rates relative to the omitted treatment category, a full enumeration of all adult household members' individual use of financial services.

The regression results appear in Table 9. In the regressions that use *banked* as the dependent variable (columns 1 and 2) many of the control variables are significant and of the expected sign. In particular, household size, and the age of and the number of grades completed by the head of household are all significantly positively linked to being banked. Rural location, the share of dependents, and the share of self-employed workers are all negatively linked to being banked. We should note that the control variables do a better job of explaining variation in the *banked* indicator than in the other indicators, as reflected in both the overall fit of the regressions and the number of significant variables. There is also a general tendency for the control variables to explain more variation in the

use of services from formal providers (*banked*, *formal non-bank saving*, and *formal credit*) than from informal ones (*informal credit* and *informal savings*).

Controlling for the household characteristics in the regressions, the comparisons across the treatment groups remain similar to those in the summary statistics in Table 6. There are no significant differences between having the head of household as the respondent and a full enumeration, as reflected in the insignificant coefficients for the *informant = head* variable for all indicators. By contrast, the tests of whether the two informant coefficients (head versus random) are equal at the bottom of the table reveal significant differences for the *banked* and *indirect access* indicators. There is no longer a significant difference for *formal credit*, as there was in the summary comparisons, but that could be because there is so little usage of formal credit in our sample. In countries where formal credit is more prevalent, significant differences might emerge.

In addition, the coefficient for having a randomly selected informant is negative and highly significant for the *banked* indicator, indicating that the random informant provides less complete information on household use of banking services than is derived from a full enumeration. In short, though the significance levels are reduced when we control for additional factors that affect usage, the same qualitative patterns emerge: the head of household and a full enumeration produce similar household usage rates, but a randomly selected (non-head) informant produces lower usage rates for services from formal providers.

To get a better understanding of whether particular household characteristics are driving the relatively low usage rates reported by random informants, we interact the control variables with the treatment variables. That is, we first multiply the explanatory

variables by *head = informant* to derive a second set of explanatory variables. We then derive a third set by doing the same for the *random informant* variable. We include the two new sets of explanatory variables in our original regressions in what we call the full-interaction specifications:

$$Finance_i = \sum_{t=1}^3 (\partial_t + \beta_t X_i) + \varepsilon_i$$

Where t refers to our three treatment categories (full enumeration, head of household informant, and random informant) and \mathbf{X} is the set covariates from our original regression. In this way, the control variables are permitted to affect reported usage in different ways across treatment categories.

We present the full-interaction results only for the *banked* indicator because the usage rate reported by the random informant is significantly lower than for the other two treatments. For the *indirect access* indicator, there is a marginally significant difference between random informants and head of household informants, but there is not a significant difference between random informants and a full enumeration. Nor do we think the *indirect access* indicator is central to our understanding of usage. The limited indirect access that we do find is also not well explained by our control variables.¹¹

For the most part, the determinants of being banked are similar across the three treatments, as indicated by the insignificant coefficients on the interaction variables (Table 10). The exceptions are worth noting, however. For the trials that use a random informant, the share of dependents has a strong negative association with being banked (see t-test at bottom of Table 7). Note that for our survey qualifying adults were all

¹¹ It is interesting, however, that the rural dummy is positive and significant in the indirect access regression whereas it was negative and significant in the banked regression. Use of someone else's account might be a relatively important means of access in remote areas.

household members age 15 or older. Thus, a number of the randomly selected informants were dependents under the definition we use to construct the dependent share control variable. The negative significant coefficient for dependent share reflects, at least in part, the difficulties that young adults face in responding to institution-based questions about household use of banking services.¹²

By contrast, there is a positive relationship between the household's share of agricultural workers and being banked for the treatments that used a random informant, suggesting perhaps that family members that work together in an agricultural setting are knowledgeable about the use of banking services by other household members. That statistical relationship is not particularly strong (p-value 0.07), and thus we are reluctant to make too much of it. Since the determinants of household use of banking services are similar whether usage is reported by a random informant or calculated from a full enumeration of individuals' use, and since the constant is not statistically different for those two treatment categories in the full-interaction specification, it appears that younger, poorly informed household members were largely responsible for the relatively low usage of banking services reported by random informants in the summary statistics in Table 6 and the basic regressions in Table 9.

It is also interesting that the constant is significantly larger for the heads of household than for the full enumeration in the full-interaction model (column 2). The vast majority of the coefficients for heads of household are insignificant, indicating that the determinants of usage are similar for those treatments and the ones that used full

¹² When we include a dummy variable indicating that the random respondent is 15-18 years old, it is negative and significant while the dependent share variable is no longer significant. This provides additional evidence that it is younger respondents who have difficulty providing accurate information about household use of banking services.

enumeration, but again the exceptions are instructive. The first is that usage of banking services is significantly greater in households where the head is numerate under full enumeration but not when the head reports on household usage (see t-test at bottom of Table 7). This suggests that numerate heads pass on knowledge to other household members about banking services that increases their own personal use, but both numerate and innumerate heads have a reasonable grasp of household use of banking services when they are asked.

The second difference is that the share of employed household members is positive and significant in the full enumeration specifications, presumably because the employed have greater need of banking services, but insignificant when the head reports on household usage (see t-test at bottom of Table 7). Like the insignificant result for numerate heads of household, the one for share of employed household members suggests that household heads have knowledge of the use of banking services among the employed members of their household that they are able to report when asked the institution-based question.

We acknowledge that we might be reading too much into these results, and that they might be open to other interpretations, but to achieve the same rates of use of banking services as for full enumeration in the summary statistics in Table 6 and the basic regression in Table 9, the results in Table 10 suggest that the head of household has substantial knowledge of the use of banking services by other household members. This, too, is an encouraging message regarding the comparability of usage rates derived from full enumerations and the reports of heads of households.

b. Product vs. Institutional Questions

For the regressions that describe individual use of financial services and compare product- versus institution-based questions, we add the following individual characteristics to the household characteristics that were used in the regressions in the previous section: the number of grades completed by the respondent and two dummy variables indicating whether he/she is numerate and employed. We expect all three variables to be positively linked to personal use of financial services. We also replace the informant dummy variables with a dummy variable indicating whether the respondent was asked product-based questions. The coefficient on that variable therefore measures reported usage rates relative to the omitted category, respondents who answered institution-based questions.

The regressions results appear in Table 11. The individual characteristics are all positive and significant for *banked* and *formal savings (banks + non-banks)*. Employed respondents are significantly more likely to use all types of financial services in Table 11 except for insurance, and the marginal effects for the non-insurance indicators are large when compared with the average individual usage rates in Table 7. The number of grades completed by the respondent is associated with greater usage of insurance, however. In all, the individual characteristics explain substantial variation in the financial usage indicators.

That said, household characteristics also explain substantial variation in individual usage. As in the household usage regressions, average age in the household and the number of grades completed by the household head are significantly positively associated with the indicators. Rural location and the shares of dependents, agricultural workers and

self-employed workers are significantly negatively associated with the indicators.¹³ The overall fit of the individual usage regressions is also better than the household usage regressions as reflected in the pseudo-R² values. The significance of the completed grades of the household head again suggests that educated household heads pass on information about the benefits of using financial services to other household members.

Most importantly, the dummy variable indicating whether the respondent answered product-based questions is positive and significant for *informal savings*, *formal credit*, and *insurance*, as was true for the summary comparisons in Table 7. The marginal effects of the product-based questions variable are also large in those regressions relative to the levels of personal use of those services in Table 7. The regression results reinforce the conclusion that product-based cues help respondents to provide a more complete picture of their use of those three financial services. For *banked, formal savings (banks + non-banks)*, and *informal credit*, the product-based questions dummy is insignificant, indicating again that product-based cues are less important for those services.

To better identify the types of individuals who benefit most from product-related cues, we interact the explanatory variables in the Table 11 with the dummy for product-based questions for the three services where we found a significant difference in usage rates for product- versus institution-based questions (see Table 12). For informal savings, the number of grades completed by the head of household is positive and significant for the product-based treatments, indicating that educated heads pass on information and experience to other household members that increases their likelihood of using those

¹³ The age of the head of household is negatively associated with indicators of individual usage, whereas it was positively associated with household usage. This is because the age of the household head competes with the average age of all household members in the individual usage regressions. When one of those variables is dropped the other is positive and significant in the regressions in Table 3.

financial services, but that those household members benefit from product-related cues when asked about their use of those services.

Although the constant is no longer significantly different in the full-interaction specification for product-versus institution-based treatments, all of the coefficients on the interaction terms (except for the aforementioned grades attained by the household head) are insignificant, indicating that the determinants of reported usage are similar for the two question formats, and suggesting that all respondents benefit from product-related cues regarding informal savings. We can draw a similar conclusion for formal credit, where the constant term remains positive and significant in the full-interaction specification (column 6).

There are however some differences in the determinants of usage of formal credit for product and institution-based questions. For example, employed respondents do not appear to benefit from product-based cues (i.e., we cannot reject that the net effect of the main effect and the interaction with the product dummy is equal to zero for that variable), but the number of completed grades is associated with higher usage for product-based questions. Those individual characteristics no doubt compete for explanatory power and thus it is not so surprising (or revealing) that we get opposite signs for those variables. For the institution-based treatment, those signs are reversed. We do not therefore put great stock in those coefficients as providing information about the types of individuals likely to benefit from product-based cues. We feel we are on firmer ground interpreting the significant positive coefficient on the product-based constant as reflecting a general problem for all respondents in using institution-based questions regarding formal credit.

Finally, with respect to insurance, the interaction terms are all insignificant at the five percent level, offering few clues about the type of respondent who would benefit most from product-related cues for that service. The constant for the product-based treatments is not significant, but it remains positive. The fit of the insurance regressions is also poor relative to the other financial indicators. On the basis of the full-interaction regression in Table 12, it appears that product-based cues help all respondents with questions about use of insurance, rather than a particular subset.

In sum, the results from the full interaction specifications do not provide firm guidance on the types of individuals that benefit most from product-based cues when reporting on their personal use of informal savings, formal credit, and insurance. All respondents appear to benefit from these cues, as was suggested by the simple sample breakdown in Table 8.

c. Controlling for Supply Side Effects

Aside from the dummy variable for rural location, the regressions have included only demand-side characteristics of households and survey respondents. Given the similarity of the samples for the different treatments described in section 3, we doubt that this is a major limitation of our analysis. However, to make sure that supply-side effects – meaning the presence of providers of financial services – are not driving the differences in reported usage across treatments that we reported above, we run three additional sets of regressions. The first uses the travel time (in minutes) to the nearest bank as our measure of the local availability of financial services. Unfortunately, we asked this question of only a small fraction of the survey respondents, and then only for the questionnaires pertaining to individual use of financial services. We therefore run a

second set of regressions on the full sample that control for supply-side effects via dummy variables corresponding to Ghana's ten regions.

We recognize, however, that the availability of financial services at the local level might not be well captured by regional dummy variables and so we run a final set of regressions that include dummy variables for each enumeration area from which we drew observations. Within these local sampling areas, fifteen households were randomly selected to answer the Financial Services Survey, and then each was randomly assigned a question format so that one-third received questionnaire 1, one-third questionnaire 2, and the final third questionnaire 3. This is therefore a highly localized control variable.

Our main conclusions remain intact when we control for supply-side effects in these ways. As in the base regressions, household usage is very similar for full enumeration and when the head of household is the informant, and reported usage of banking services is significantly lower for the random informant (Appendix B). For individual usage, results are also very similar to the base regressions (Appendix C). Reported usage is significantly higher for product-based questions for informal savings, formal credit, and insurance. This pattern holds for the limited sample when we include the question on travel time to the nearest bank, and for the broader sample when we include region or enumeration area fixed effects. It seems unlikely therefore that the omission of supply-side variables from our base regressions could be driving our results.

6. Conclusions

Measuring the breadth of outreach of financial sectors in developing countries remains a challenge, but one that must be met if we are to better understand how financial services (or their absence) affects the livelihoods of the poor. Surveys of individuals and

households about their use of financial services hold the most promise for measuring outreach well, but their cost and the other logistical hurdles have made it difficult to develop a standard method of questioning that would generate comparable financial usage data across countries and within countries over time. Our experimental analysis was designed to contribute to our understanding about the comparability of financial usage data generated under different question formats.

Our main findings are straightforward, intuitive, and, we hope, useful for future data gathering efforts. We find that rates of household usage are similar when the head reports on behalf of the household or when the rate is tabulated from a full enumeration of individual use. By contrast, randomly selected informants provide a less complete picture of household use of financial services than the other two methods. The comparability of data across the head of household and the full enumeration is potentially important because interviewing only the head is much less costly than interviewing all household members. At the same time, some surveys, for example those measuring labor force participation, are designed to be full enumerations. By using the head of household when possible and a full enumeration when it is dictated for other reasons, there is potential to increase the number of countries for which comparable data can be generated.

For formal credit, informal savings, and insurance we find higher reported usage when questions are asked about specific financial products rather than about the respondents' dealings with types of financial institutions. Product-related cues appear to be important for respondents regarding these services, and not just those who we would expect to be less financially knowledgeable. Although we only tested product-based and institution-based usage in the context of personal use of financial services, it would seem

likely that the product-related cues would also benefit respondents when informing about household usage of those services. We would recommend, therefore, that the institution-based questions used in the financial modules of larger, sometimes multi-purpose, surveys be adapted to include product-based cues that are appropriate to the country context.

Decisions on future questionnaires will also need to take into account the relative costs of implementing the different treatments. We find that the costs of the different treatments (in terms of interview time) administered conform to expectations.¹⁴ The full enumeration using the product list takes the longest to administer. But, full enumeration itself, using either the product or institution questionnaire adds significant time to the interviews compared to using a proxy respondent for the household. In other words, the finding that the head of household is able to provide similar data to that obtained from full enumeration for most products has positive implications for the feasibility of expanding data collection on financial service use to other countries. Finally, however, for survey designers in countries that may have higher levels of financial service use, it is also important to note how much average interview time rises when household use of financial services is higher. For example, the full enumeration product-based format in questionnaire 1 took 20-30% more time to administer when members of the household used banking or insurance services than when they did not (See Table 13.)

Lurking throughout our paper is a concern about our ability to generalize beyond Ghana. While we feel that there is a strong undercurrent of common sense to our main

¹⁴ The time data collected in this survey are, at best, a rough approximation of the actual time required. No effort was made to record time at the level of the specific product or institution modules. Only a total for the entire household interview, which includes a roster and further questions on attitudes and knowledge of finance, is available. Also as Groups 2 and 3 contain two different treatments, it is not possible to really separate out the time costs associated with each one.

findings, and thus what we find is likely to be relevant in other countries as well, our paper is in the end about Ghana. While Ghana might be an adequate reflection of low-income countries in much of Sub-Saharan Africa, it is unlikely to be reflective of the whole developing world. The best we can do in the context of this paper is simply to acknowledge this limitation, but going forward we can and will repeat this type of experiment in other countries. We have already done so in Timor Leste, where very few respondents use any financial services, and so the differences across treatments were not significant, which suggests that the concerns raised in our analysis are of second order importance in the most financially under-developed countries. A similar experiment is also underway for Jamaica.

We would remind readers that we live in a world of rough approximation when it comes to measuring the outreach of the financial systems of developing countries. The reliability of estimates from accounts-based approaches and approaches that meld accounts-based and survey-based information via regressions is difficult to assess. Our hope is that our results provide some practical guidance on how to generate comparable financial usage data across countries via surveys, as surveys would appear to represent the best vehicle for generating accurate data.

References

- Beck, Thorsten and Asli Demirgüç-Kunt, 2008. "Access to Finance: An Unfinished Agenda." *World Bank Economic Review*, 22(3): 383-396.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine. 2000. "A New Database on the Structure and Development of the Financial Sector." *World Bank Economic Review* 14 (3): 597–605.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine. 2007. "Finance, Inequality, and the Poor." *Journal of Economic Growth* 12(1): 27-49.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Maria Soledad Martinez Peria, 2007. "Reaching Out: Access to and Use of Banking Services across Countries." *Journal of Financial Economics* 85(?): 234-266.
- Beck, Thorsten, Asli Demirgüç-Kunt, and Maria Soledad Martinez Peria, 2008. "Banking Services for Everyone? Barriers to Bank Access and Use around the World." *World Bank Economic Review* 22(3): 397-430.
- Beck, Thorsten, Ross Levine, and Norman Loayza. 2000. "Finance and the Sources of Growth." *Journal of Financial Economics* 58 (1–2): 261–300.
- Clarke, George R.G., L. Colin Xu, and Heng-Fu Zou, 2006. "Finance and Income Inequality: What Do the Data Tell Us?" *Southern Economic Journal* 72(3): 578-596.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff, 2008. "Returns to Capital in Microenterprises: Evidence from a Field Experiment." *Quarterly Journal of Economics*, 123(4): 1329-1372.
- Galor, Oded and Joseph Zeira, 1993. "Income Distribution and Macroeconomics." *Review of Economic Studies* 60(1): 35-52.
- Gasparini, Leonardo, Federico Gutierrez, A Tamola, L. Tornarolli, and Guido Porto. 2004. "Finance and Credit Variables in Household Surveys of Developing Countries." World Bank mimeo, Washington, DC.
- Ghana Statistical Service, 2006. "Sample Design for Round Five of the Ghana Living Standards Survey (GLSS 5)", mimeo
- Honohan, Patrick, 2004. "Financial Development, Growth and Poverty: How Close are the Links?" In C. Goodhart, (Ed.), *Financial Development and Economic Growth: Explaining the Links*, London: Palgrave.

- Honohan, Patrick, 2005. "Measuring Microfinance Access: Building on Existing Cross-Country Data." World Bank, Policy Research Working Paper 3606. Washington, DC.
- Honohan, Patrick, 2008. "Cross-Country Variation in Household Access to Financial Services." *Journal of Banking and Finance* 32(11): 2493-2500.
- Jolliffe, Dean, 2001. "Measuring Absolute and Relative Poverty: The Sensitivity of Estimated Household Consumption to Survey Design." *Journal of Economic and Social Measurement* 27(1): 1-23.
- Klapper, Leora, Lcu Laeven, Raghuram Rajan, 2006. "Entry Regulation as a Barrier to Entrepreneurship." *Journal of Financial Economics* 82(3): 591-629.
- Kochar, Anjali, 2000. "Savings" in Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study, editors Margaret Grosh and Paul Glewwe, World Bank.
- Levine, Ross. 2005. "Finance and Growth: Theory and Evidence." In Philippe Aghion and Steven Durlauf, eds., *Handbook of Economic Growth*. Amsterdam: Elsevier Science.
- Levine, Ross, Norman Loayza, and Thorsten Beck. 2000. "Financial Intermediation and Growth: Causality and Causes." *Journal of Monetary Economics* 46 (1): 31-77.
- Levine, Ross, and Sara Zervos. 1998. "Stock Markets, Banks, and Economic Growth." *American Economic Review* 88 (3): 537-58.
- McKenzie, David and Christopher Woodruff, 2008. "Experimental Returns on Returns to Capital and Access to Finance in Mexico." *World Bank Economic Review*
- Peachey, Stephen and Allan Roe, 2006. "Access to Finance: Measuring the Contributions of Savings Banks." Working Paper. World Savings Banks Institute.
- Pradhan, Menno, 2001. "Welfare Analysis With a Proxy Consumption Measure: Evidence From a Repeated Experiment In Indonesia." mimeo
- Rajan, Raghuram G., and Luigi Zingales. 1998. "Financial Dependence and Growth." *American Economic Review* 88 (3): 559-86.
- Scott, Kinnon, 2000. "Credit" in Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study, editors Margaret Grosh and Paul Glewwe, World Bank.
- Statistical Institute and Planning Institute of Jamaica, 1994. "Survey of Living Conditions, 1994." Kingston.

Steele, Diane, 1998. "Ecuador Consumption Items." World Bank, mimeo.

World Bank, 2007. *Finance for All? Policies and Pitfalls in Expanding Access*, Policy Research Report, Washington, DC.

Table 1: Treatments		
	Questionnaire Administered	
Respondent	Product	Institutional
Head of household	----	Group 3 n=659 households
Randomly selected adult	Group 2 n=643 households	Group 3 n=659 households
All adults (15 and older)	Group 1 n=653 households, 1118 individuals	Group 2 n=643 households 1568 individuals

Note: Each 'Group' represents a different questionnaire that was fielded. The 'n' is the number of households, household heads, randomly selected adults or individuals who were administered the questionnaire.

Table 2: Enumeration Areas from the GLSS5 used for Financial Service Survey Sample					
Regions	GLSS5 Cycle10		GLSS5 Cycle 11		Total
	Urban EAs	Rural EAs	Urban EAs	Rural EAs	
Northern	1	5	-	6	12
Upper East	1	2	-	3	6
Upper West	-	3	-	3	6
Ashanti	3	6	3	6	18
Eastern	2	4	2	4	12
Brong Ahafo	2	4	-	6	12
Volta	-	6	-	6	12
Western	4	2	3	3	12
Central	6	-	4	2	12
Greater Accra	6	3	8	1	18
Total	25	35	20	40	120

Source: GSS

Table 3: Descriptive Statistics: Full GLSS 5 Sample and Subsample used in FSS

	GLSS 5: Full Sample Mean St. Dev	FSS SubSample Mean St. Dev	T-test of equivalence of means t-statistic p-value
Coastal	29.65	33.12	3.21
	45.68	47.07	0.00
Forest	40.83	38.87	1.70
	49.15	48.76	0.09
Savannah	29.52	28.01	1.41
	45.61	44.91	0.16
Rural	58.35	62.35	3.46
	49.30	48.46	0.00
Female Head of Household	27.88	28.62	0.70
	44.84	45.21	0.48
Literate Head of Household	47.79	44.35	2.94
	49.95	49.69	0.00
Numerate Head of Household	64.24	64.16	0.06
	47.93	47.96	0.95
Age of Head of Household	45.34	45.51	0.46
	15.63	15.64	0.65
Extended Family	26.82	27.97	1.10
	44.31	44.89	0.27
Household Size	4.20	4.22	0.24
	2.83	2.87	0.81
Agricultural Workers in Household	65.10	69.50	3.96
	47.67	46.05	0.00
Self-Employed Workers in Household	69.59	70.72	1.06
	46.01	45.51	0.29
Employees in Household	23.56	23.56	0.00
	42.44	42.45	1.00
Individual			
Age	19.62	24.04	0.66
	19.56	24.19	0.51
Male	48.69	49.31	1.08
	49.98	50.00	0.28

Table 4: Factors Affecting Attrition between GLSS 5 and FSS		
	(1)	(2)
	(Coefficient)	(Marginal Effects)
Rural	-0.177**	0.037**
	[0.079]	[0.017]
Household Size-only members	-0.169	-0.034
	[0.110]	[0.022]
Extended family	0.036	0.007
	[0.093]	[0.019]
No. of children ages 0-5	-0.066	-0.013
	[0.120]	[0.024]
No. of children ages 6-12	0.096	0.019
	[0.116]	[0.023]
No. of children ages 13-18	0.017	0.003
	[0.117]	[0.024]
No. of adults ages 19-59	0.074	0.015
	[0.105]	[0.021]
Hhld head female	-0.077	-0.015
	[0.087]	[0.017]
Hhld head age, years	-0.010***	-0.002***
	[0.003]	[0.001]
Hhld head married or union	0.026	0.005
	[0.087]	[0.017]
Hhld head attended schooling	-0.004	-0.001
	[0.083]	[0.017]
Hhld with agr worker(s)	-0.040	-0.008
	[0.089]	[0.018]
Hhld with employee(s)	0.138	0.029
	[0.089]	[0.020]
Hhld with employer(s)	0.162	0.036
	[0.139]	[0.033]
Head worked in Last 7 days	-0.357***	-0.084***
	[0.115]	[0.031]
Head migrant	-0.066	-0.014
	[0.069]	[0.014]
Constant	0.291	
	[0.199]	
Observations	2282	2282

Note: Standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Household and Individual Characteristics across Treatment Groups						
Treatment Group	Means by Groups			T-tests of equivalence of means		
	Group 1 Means (std dev)	Group 2 Means (std. dev)	Group 3 Means (std. dev)	Groups 1 & 2 t-statistic p value	Groups 2 & 3 t-statistic p value	Groups 3 & 1 t-statistic p value
Coastal	30.5 (46.1)	29.6 (45.7)	29.3 (45.5)	0.37 0.71	0.12 0.90	0.49 0.62
Forest	40.6 (49.1)	41.4 (49.3)	40.2 (49.1)	0.30 0.76	0.45 0.65	0.15 0.88
Savannah	28.9 (45.3)	29.0 (45.4)	30.5 (46.1)	0.05 0.96	0.60 0.55	0.65 0.51
Rural	64.4 (47.9)	650 (47.7)	65.7 (47.5)	0.20 0.84	0.28 0.78	0.49 0.63
Female head of household	26.4 (44.1)	28.8 (45.3)	29.7 (45.7)	0.97 0.33	0.37 0.71	1.34 0.18
Literate head of household	41.8 (49.4)	41.4 (49.3)	43.9 (49.7)	0.15 0.88	0.88 0.38	0.74 0.46
Numerate head of household	63.5 (48.2)	60.7 (48.9)	62.8 (48.4)	1.03 .031	0.77 0.44	0.26 0.80
Age of head of household	46.0 (15.5)	46.4 (15.7)	46.5 (15.1)	0.39 0.70	0.17 0.87	0.57 0.57
Extended family	29.6 (45.7)	28.0 (45.0)	30.8 (46.2)	0.63 0.53	1.09 0.27	0.47 0.64
Household size	4.50 (2.86)	4.24 (2.92)	4.59 (2.98)	1.63 0.10	2.15 0.03	0.56 0.57
Agricultural workers in hhld	72.7 (44.6)	71.2 (45.3)	71.9 (45.0)	0.60 0.55	0.30 0.77	0.30 0.76
Self-employed workers in hhld	73.3 (44.6)	75.1 (43.3)	74.4 (43.7)	0.74 0.46	0.30 0.76	0.44 0.66
Employees in household	22.6 (41.9)	21.7 (41.2)	21.4 (41.0)	0.41 0.68	0.11 0.91	0.52 0.60
Individual						
Age	23.7 (19.6)	24.3 (20.0)	23.7 (19.6)	1.10 0.27	1.13 0.26	0.02 0.98
Male	49.4 (50.0)	49.1 (50.0)	49.2 (50.0)	0.19 0.84	0.04 0.97	0.15 0.88

Table 6
Percentage of Households That Use
Financial Services
(Standard errors in parentheses)

Survey Type	Banked	Indirect Access	Formal Non-Bank Saving	Formal Credit	Informal Savings	Informal Credit	Insurance
Head of Household n=638	26.5% (1.7%)	6.4% (1.0%)	3.0% (0.7%)	3.3% (0.7%)	19.7% (1.6%)	4.2% (0.8%)	11.3% (1.3%)
Random Household Member n=480	10.0% (1.4%)	3.3% (0.8%)	1.7% (0.6%)	1.5% (0.5%)	17.7% (1.7%)	4.2% (0.9%)	10.6% (1.4%)
Full Enumeration n=643	25.5% (1.7%)	5.1% (0.9%)	2.5% (0.6%)	1.9% (0.5%)	17.3% (1.5%)	4.2% (0.8%)	7.9% (1.1%)
<i>T-tests of equivalence of means</i>							
Head vs. Random p-value	7.05 0.00	2.33 0.02	1.41 0.16	1.94 0.05	0.86 0.39	0.05 0.96	0.35 0.73
Head vs. Full Enumeration p-value	0.40 0.69	0.99 0.32	0.54 0.59	1.61 0.11	1.15 0.25	0.03 0.98	2.04 0.04
Full Enumeration vs. Random p-value	6.69 0.00	1.46 0.14	0.94 0.35	0.52 0.60	0.19 0.85	0.03 0.98	1.55 0.12

Table 7
Percentage of Individuals That Use Financial Services: Product vs. Institutional
Questions
(Standard errors in parentheses)

Survey Type	Banked	Formal Saving Banks + Non-Banks	Formal Credit	Informal Savings	Informal Credit	Insurance
Questions on Use of Products n=2201	14.3% (0.7%)	14.2% (0.7%)	2.8% (0.4%)	18.8% (0.8%)	2.0% (0.3%)	18.4% (0.8%)
Questions on Use of Institutions n=1568	13.3% (0.9%)	13.8% (0.9%)	0.8% (0.2%)	8.9% (0.7%)	2.2% (0.4%)	5.7% (0.6%)
<i>T-tests of equivalence of means</i>						
Products vs. Institutions p-value	0.88 0.38	0.39 0.70	4.32 0.00	8.49 0.00	0.46 0.65	11.57 0.00

Table 8
Percentage of Individuals That Use Financial Services: Product vs. Institutional Questions
(Standard errors in parentheses)

Survey Type	Banked	Formal Saving Banks + Non-Banks	Formal Credit	Informal Savings	Informal Credit	Insurance
<i>Household Heads</i>						
Questions on Use of Products n=2201	22.8% (1.3%)	22.7% (1.3%)	4.6% (0.7%)	21.9% (1.3%)	2.4% (0.5%)	20.8% (1.3%)
Questions on Use of Institutions n=1568	23.8% (1.7%)	24.5% (1.7%)	1.4% (0.5%)	12.7% (1.3%)	2.7% (0.6%)	7.5% (1.0%)
<i>T-tests of equivalence of means</i>						
Products vs. Institutions p-value	0.48 0.63	0.81 0.42	3.50 0.00	4.70 0.00	0.40 0.69	7.29 0.00
<i>Non-Household Heads</i>						
Questions on Use of Products n=2201	7.4% (0.8%)	7.4% (0.8%)	1.4% (0.3%)	16.3% (1.1%)	1.6% (0.4%)	16.4% (1.1%)
Questions on Use of Institutions n=1568	6.0% (0.8%)	6.5% (0.8%)	0.4% (0.2%)	6.3% (0.8%)	1.8% (0.4%)	4.4% (0.7%)
<i>T-tests of equivalence of means</i>						
Products vs. Institutions p-value	1.29 0.20	0.89 0.37	2.25 0.02	7.10 0.00	0.34 0.73	8.91 0.00

Table 9: Household Usage Rates Regressions

	Banked		Indirect access to account		Formal non-bank savings		Informal savings		Formal credit		Informal credit		Insurance	
	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Average age of HH	-0.0035	-0.0009	0.0045	0.0004	0.0065	0.0002	-0.0020	-0.0005	0.0152*	0.0005*	-0.0030	-0.0002	0.0023	0.0004
Members	(0.0042)	(0.0011)	(0.0058)	(0.0005)	(0.0079)	(0.0003)	(0.0037)	(0.0009)	(0.0084)	(0.0003)	(0.0055)	(0.0004)	(0.0042)	(0.0006)
Rural Dummy	-0.2229***	-0.0582***	0.2504*	0.0226*	-0.1498	-0.0053	-0.2222***	-0.0569***	0.0580	0.0019	-0.3568***	-0.0282***	0.1146	0.0175
	(0.0859)	(0.0224)	(0.1293)	(0.0116)	(0.1600)	(0.0057)	(0.0846)	(0.0217)	(0.1747)	(0.0058)	(0.1309)	(0.0103)	(0.1013)	(0.0155)
Household Size	0.0467***	0.0122***	0.0193	0.0017	0.0151	0.0005	0.0064	0.0016	0.0967***	0.0032***	0.0198	0.0016	0.0326*	0.0050*
	(0.0148)	(0.0039)	(0.0221)	(0.0020)	(0.0291)	(0.0010)	(0.0150)	(0.0038)	(0.0269)	(0.0009)	(0.0213)	(0.0017)	(0.0168)	(0.0026)
Share of dependents	-0.6061***	-0.1583***	-0.0383	-0.0035	0.4626	0.0163	-0.1255	-0.0322	-0.8710**	-0.0291**	0.2597	0.0205	0.0204	0.0031
	(0.1761)	(0.0458)	(0.2494)	(0.0225)	(0.3593)	(0.0127)	(0.1733)	(0.0444)	(0.3814)	(0.0123)	(0.2798)	(0.0220)	(0.2048)	(0.0313)
Age of HH Head	0.0143***	0.0037***	-0.0016	-0.0001	-0.0100	-0.0004	-0.0030	-0.0008	-0.0094	-0.0003	-0.0028	-0.0002	0.0090**	0.0014**
	(0.0041)	(0.0011)	(0.0059)	(0.0005)	(0.0082)	(0.0003)	(0.0036)	(0.0009)	(0.0089)	(0.0003)	(0.0054)	(0.0004)	(0.0043)	(0.0007)
Number of completed grades, HH Head	0.0301***	0.0079***	0.0176***	0.0016***	0.0188***	0.0007***	0.0046	0.0012	0.0194***	0.0006***	-0.0043	-0.0003	0.0086**	0.0013**
	(0.0038)	(0.0010)	(0.0051)	(0.0005)	(0.0061)	(0.0002)	(0.0037)	(0.0009)	(0.0067)	(0.0002)	(0.0056)	(0.0004)	(0.0043)	(0.0007)
Is HH head numerate?	0.1806	0.0462	0.1321	0.0116	0.4030	0.0132	0.2853***	0.0708***	-0.0065	-0.0002	0.2477	0.0187	0.4338***	0.0623***
	(0.1120)	(0.0279)	(0.1617)	(0.0138)	(0.2533)	(0.0072)	(0.1049)	(0.0251)	(0.2326)	(0.0078)	(0.1600)	(0.0115)	(0.1341)	(0.0179)
Share of Agricultural Workers in HH	0.0279	0.0073	-0.1066	-0.0096	-0.0453	-0.0016	-0.1533	-0.0393	-0.0160	-0.0005	0.2109	0.0167	-0.6734***	-0.1029***
	(0.1366)	(0.0357)	(0.2029)	(0.0183)	(0.2918)	(0.0103)	(0.1351)	(0.0346)	(0.2701)	(0.0090)	(0.2123)	(0.0168)	(0.1770)	(0.0265)
Share of Employed Members of HH	0.2192	0.0572	0.4193	0.0378	0.2687	0.0095	-0.2638	-0.0676	0.3888	0.0130	-0.1060	-0.0084	0.1741	0.0266
	(0.1997)	(0.0522)	(0.2807)	(0.0253)	(0.3609)	(0.0129)	(0.2083)	(0.0533)	(0.3793)	(0.0130)	(0.3076)	(0.0243)	(0.2528)	(0.0386)
Share of Self-employed members of HH	-0.4002**	-0.1045**	0.3462	0.0312	-0.3879	-0.0137	-0.1296	-0.0332	0.1963	0.0066	-0.8091**	-0.0639**	0.3543	0.0541
	(0.1811)	(0.0472)	(0.2595)	(0.0233)	(0.4026)	(0.0141)	(0.1775)	(0.0455)	(0.3694)	(0.0124)	(0.3199)	(0.0243)	(0.2204)	(0.0336)
Informant = Head of HH	0.0666	0.0175	0.0807	0.0074	0.0500	0.0018	0.0981	0.0254	0.1385	0.0048	0.0135	0.0011	0.1695	0.0268
	(0.0888)	(0.0235)	(0.1249)	(0.0117)	(0.1670)	(0.0061)	(0.0878)	(0.0230)	(0.1737)	(0.0064)	(0.1372)	(0.0109)	(0.1080)	(0.0176)
Informant = Random Non-Head	-0.7691***	-0.1678***	-0.1928	-0.0161	-0.1581	-0.0052	0.0027	0.0007	-0.1436	-0.0045	-0.0311	-0.0024	0.1676	0.0271
	(0.1121)	(0.0197)	(0.1540)	(0.0119)	(0.1995)	(0.0060)	(0.0972)	(0.0249)	(0.2184)	(0.0063)	(0.1478)	(0.0114)	(0.1169)	(0.0199)
Constant	-1.4922***		-2.4670***		-2.6102***		-0.7018***		-2.7882***		-1.4918***		-2.4824***	
	(0.2098)		(0.3098)		(0.4343)		(0.2040)		(0.4471)		(0.3146)		(0.2602)	
Observations	1734		1734		1734		1734		1734		1734		1734	
Log-likelihood	-750.0507		-328.7997		-177.3867		-795.1034		-163.9581		-290.1617		-521.7790	
Pseudo-R2	0.1785		0.0632		0.1194		0.0377		0.1211		0.0414		0.0729	
Chi2_head_random	43.3349***		2.7611*		0.9696		0.7934		1.6970		0.0720		0.0002	
p_head_random	[0.0000]		[0.0966]		[0.3248]		[0.3731]		[0.1927]		[0.7884]		[0.9878]	

Table 10: Household Usage Rates Regressions, Banked Indicators, Full Interactions

	Coefficients (one regression)			Marginal effects (one regression)		
	Main effects (full enumeration)	Interaction terms		Main effects (full enumeration)	Interaction terms	
		Informant = Head of HH	Informant = Random Non-Head		Informant = Head of HH	Informant = Random Non-Head
	(1)	(2)	(3)	(4)	(5)	(6)
Average age of HH members	-0.0056 (0.0079)	-0.0196 (0.0226)	0.0123 (0.0101)	-0.0014 (0.0020)	-0.0051 (0.0058)	0.0032 (0.0026)
Rural Dummy	-0.1536 (0.1370)	-0.1298 (0.1915)	-0.1064 (0.2596)	-0.0397 (0.0354)	-0.0325 (0.0464)	-0.0266 (0.0628)
Household Size	0.0610** (0.0260)	-0.0204 (0.0352)	-0.0064 (0.0425)	0.0157** (0.0067)	-0.0053 (0.0091)	-0.0016 (0.0110)
Share of dependents	-0.2184 (0.2719)	-0.5899 (0.3913)	-1.0313* (0.5812)	-0.0564 (0.0702)	-0.1524 (0.1010)	-0.2664* (0.1493)
Age of HH Head	0.0211*** (0.0064)	0.0091 (0.0224)	-0.0107 (0.0095)	0.0054*** (0.0016)	0.0023 (0.0058)	-0.0028 (0.0025)
Number of completed grades, HH Head	0.0290*** (0.0060)	0.0106 (0.0089)	-0.0102 (0.0107)	0.0075*** (0.0016)	0.0027 (0.0023)	-0.0026 (0.0028)
Is HH head numerate?	0.3716** (0.1727)	-0.3741 (0.2482)	-0.2127 (0.3408)	0.0921** (0.0409)	-0.0875* (0.0521)	-0.0512 (0.0762)
Share of Agricultural Workers in HH	-0.0578 (0.2220)	-0.0385 (0.3017)	0.7349* (0.4397)	-0.0149 (0.0574)	-0.0100 (0.0779)	0.1898* (0.1130)
Share of Employed Members of HH	0.5875** (0.2897)	-0.8293* (0.4311)	0.2356 (0.7490)	0.1517** (0.0750)	-0.2142* (0.1113)	0.0608 (0.1935)
Share of Self-employed members of HH	-0.2965 (0.2938)	0.0344 (0.3947)	-0.9794 (0.6670)	-0.0766 (0.0758)	0.0089 (0.1019)	-0.2530 (0.1717)
Constant	-2.1828*** (0.3399)	1.2110*** (0.4590)	0.2447 (0.6873)		0.3499** (0.1403)	0.0666 (0.1963)
Observations	1734					
Log-likelihood	-732.8796					
Pseudo-R2	0.1973					
Is HH head numerate?	-0.0025					
(Main + interaction w/ head)	[0.9888]					
Share of Employed Members	-0.2418					
(Main + interaction w/ head)	[0.4488]					
Share of dependents	-1.2497**					
(Main + interaction w/ random)	[0.0150]					
Share of Agricultural Workers	0.6770*					
(Main + interaction w/ random)	[0.0745]					

Table 11: Individual Usage Rates Regressions, Product Versus Institutional Questions

	Banked		Formal saving (Banks + non-banks)s		Informal savings		Formal credit		Informal credit		Insurance	
	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Average age of HH Members	0.0297*** (0.0025)	0.0048*** (0.0004)	0.0307*** (0.0025)	0.0050*** (0.0004)	0.0097*** (0.0022)	0.0020*** (0.0005)	0.0269*** (0.0059)	0.0004*** (0.0001)	0.0042 (0.0040)	0.0002 (0.0001)	0.0113*** (0.0022)	0.0019*** (0.0004)
Rural Dummy	-0.2003*** (0.0701)	-0.0339*** (0.0124)	-0.1966*** (0.0698)	-0.0336*** (0.0124)	-0.2631*** (0.0658)	-0.0566*** (0.0149)	0.1309 (0.1375)	0.0019 (0.0019)	-0.4195*** (0.1269)	-0.0189*** (0.0068)	-0.0054 (0.0685)	-0.0009 (0.0117)
Household Size	0.0070 (0.0118)	0.0011 (0.0019)	0.0030 (0.0119)	0.0005 (0.0019)	-0.0248** (0.0109)	-0.0051** (0.0022)	0.0290 (0.0208)	0.0004 (0.0003)	-0.0479** (0.0207)	-0.0018** (0.0008)	0.0144 (0.0107)	0.0025 (0.0018)
Share of dependents	-0.2695* (0.1404)	-0.0434* (0.0226)	-0.2540* (0.1398)	-0.0414* (0.0228)	-0.1279 (0.1322)	-0.0260 (0.0269)	-0.1186 (0.2793)	-0.0018 (0.0043)	-0.0021 (0.2427)	-0.0001 (0.0091)	0.1432 (0.1400)	0.0244 (0.0238)
Age of HH Head	-0.0114*** (0.0029)	-0.0018*** (0.0005)	-0.0141*** (0.0029)	-0.0023*** (0.0005)	-0.0112*** (0.0026)	-0.0023*** (0.0005)	-0.0186*** (0.0065)	-0.0003*** (0.0001)	-0.0042 (0.0045)	-0.0002 (0.0002)	-0.0001 (0.0026)	-0.0000 (0.0004)
Number of completed grades, HH Head	0.0086** (0.0039)	0.0014** (0.0006)	0.0133*** (0.0039)	0.0022*** (0.0006)	0.0081** (0.0037)	0.0017** (0.0007)	0.0279*** (0.0078)	0.0004*** (0.0001)	0.0054 (0.0070)	0.0002 (0.0003)	0.0172*** (0.0037)	0.0029*** (0.0006)
Is HH head numerate?	0.0026 (0.1283)	0.0004 (0.0206)	-0.0810 (0.1285)	-0.0133 (0.0214)	0.0662 (0.1055)	0.0134 (0.0212)	-0.5341** (0.2555)	-0.0098** (0.0060)	-0.1729 (0.1950)	-0.0067 (0.0079)	-0.1019 (0.1119)	-0.0176 (0.0195)
Share of Agricultural Workers in HH	-0.2261* (0.1208)	-0.0364* (0.0194)	-0.1714 (0.1194)	-0.0279 (0.0194)	-0.3506*** (0.1100)	-0.0714*** (0.0224)	0.2486 (0.2255)	0.0038 (0.0035)	-0.0373 (0.2018)	-0.0014 (0.0075)	-0.6527*** (0.1253)	-0.1111*** (0.0210)
Share of Employed Members of HH	0.2978* (0.1624)	0.0480* (0.0263)	0.2838* (0.1614)	0.0462* (0.0264)	-0.2293 (0.1563)	-0.0467 (0.0318)	-0.0433 (0.2934)	-0.0007 (0.0045)	-0.8983*** (0.3097)	-0.0336*** (0.0114)	0.1192 (0.1712)	0.0203 (0.0291)
Share of Self-employed Members of HH	-0.4587*** (0.1631)	-0.0739*** (0.0263)	-0.4580*** (0.1613)	-0.0746*** (0.0263)	-0.3188** (0.1458)	-0.0649** (0.0296)	-0.7274** (0.3350)	-0.0111** (0.0056)	-1.3982*** (0.3245)	-0.0524*** (0.0112)	0.1525 (0.1615)	0.0260 (0.0275)
Number of completed grades, respondent	0.0279*** (0.0045)	0.0045*** (0.0007)	0.0227*** (0.0045)	0.0037*** (0.0007)	-0.0027 (0.0042)	-0.0005 (0.0009)	0.0097 (0.0080)	0.0001 (0.0001)	-0.0044 (0.0080)	-0.0002 (0.0003)	0.0122*** (0.0043)	0.0021*** (0.0007)
Is respondent numerate?	0.2519* (0.1310)	0.0394* (0.0198)	0.3290** (0.1310)	0.0516** (0.0197)	0.1635 (0.1078)	0.0327 (0.0212)	0.2476 (0.2584)	0.0036 (0.0037)	-0.1030 (0.2009)	-0.0039 (0.0079)	0.0948 (0.1154)	0.0160 (0.0192)
Is respondent employed?	0.3364*** (0.0854)	0.0483*** (0.0109)	0.3510*** (0.0857)	0.0507*** (0.0109)	0.5876*** (0.0817)	0.1002*** (0.0115)	1.0938*** (0.3040)	0.0106*** (0.0024)	0.6326*** (0.1687)	0.0176*** (0.0035)	-0.0437 (0.0766)	-0.0075 (0.0134)
Product	0.0849 (0.0608)	0.0135 (0.0096)	0.0509 (0.0603)	0.0082 (0.0097)	0.4714*** (0.0577)	0.0919*** (0.0107)	0.5968*** (0.1341)	0.0086*** (0.0026)	-0.0753 (0.0999)	-0.0029 (0.0039)	0.7970*** (0.0664)	0.1265*** (0.0095)
Constant	-2.4161*** (0.1859)		-2.3123*** (0.1842)		-1.3064*** (0.1678)		-4.2915*** (0.4658)		-1.4422*** (0.3041)		-2.4837*** (0.1848)	
Observations	3630		3630		3630		3630		3630		3630	
Log-likelihood	-1122.7392		-1137.7028		-1375.6403		-287.2571		-343.8571		-1203.8389	
Pseudo-R2	0.2379		0.2343		0.1040		0.2134		0.0682		0.1543	

Table 12: Individual Usage Rates Regressions, Product Versus Institutional Questions, Full Intereactions

	Informal savings (one regression)				Formal credit (one regression)				Insurance (one regression)			
	Coefficients		Marginal effects		Coefficients		Marginal effects		Coefficients		Marginal effects	
	Main effects (full enum.) (1)	Interactions with Product (2)	Main effects (full enum.) (3)	Interactions with Product (4)	Main effects (full enum.) (5)	Interactions with Product (6)	Main effects (full enum.) (7)	Interactions with Product (8)	Main effects (full enum.) (9)	Interactions with Product (10)	Main effects (full enum.) (11)	Interactions with Product (12)
Average age of HH members	0.0084** (0.0037)	0.0022 (0.0046)	0.0017** (0.0007)	0.0004 (0.0009)	0.0285** (0.0134)	0.0001 (0.0152)	0.0001** (0.0000)	0.0000 (0.0000)	0.0094** (0.0039)	0.0025 (0.0047)	0.0016** (0.0006)	0.0004 (0.0008)
Rural Dummy	-0.2442** (0.1122)	-0.0196 (0.1389)	-0.0523** (0.0252)	-0.0040 (0.0281)	0.1609 (0.2905)	-0.0110 (0.3323)	0.0004 (0.0008)	-0.0000 (0.0010)	0.1771 (0.1324)	-0.2483 (0.1552)	0.0285 (0.0204)	-0.0404 (0.0245)
Household Size	-0.0285 (0.0185)	0.0060 (0.0229)	-0.0058 (0.0038)	0.0012 (0.0047)	-0.0023 (0.0511)	0.0407 (0.0562)	-0.0000 (0.0002)	0.0001 (0.0002)	0.0086 (0.0199)	0.0081 (0.0237)	0.0015 (0.0033)	0.0014 (0.0040)
Share of dependents	-0.1560 (0.2370)	0.0325 (0.2861)	-0.0318 (0.0482)	0.0066 (0.0583)	-0.9130 (0.6124)	0.9851 (0.6931)	-0.0027 (0.0018)	0.0029 (0.0021)	0.3415 (0.3059)	-0.2706 (0.3453)	0.0573 (0.0513)	-0.0454 (0.0579)
Age of HH Head	-0.0098** (0.0044)	-0.0021 (0.0054)	-0.0020** (0.0009)	-0.0004 (0.0011)	-0.0119 (0.0141)	-0.0106 (0.0161)	-0.0000 (0.0000)	-0.0000 (0.0001)	-0.0063 (0.0051)	0.0082 (0.0060)	-0.0011 (0.0009)	0.0014 (0.0010)
Number of completed grades, HH Head	-0.0023 (0.0064)	0.0164** (0.0079)	-0.0005 (0.0013)	0.0033** (0.0016)	0.0414*** (0.0144)	-0.0181 (0.0172)	0.0001*** (0.0001)	-0.0001 (0.0001)	0.0121* (0.0070)	0.0081 (0.0083)	0.0020* (0.0012)	0.0014 (0.0014)
Is HH head numerate?	0.0851 (0.1850)	-0.0426 (0.2258)	0.0172 (0.0370)	-0.0086 (0.0453)	-0.8876 (0.5929)	0.4259 (0.6609)	-0.0043 (0.0048)	0.0016 (0.0033)	0.2386 (0.2203)	-0.4817* (0.2565)	0.0390 (0.0349)	-0.0740* (0.0361)
Share of Agricultural Workers in HH	-0.4621** (0.1942)	0.1544 (0.2362)	-0.0941** (0.0394)	0.0314 (0.0481)	0.1901 (0.4714)	0.0185 (0.5402)	0.0006 (0.0015)	0.0001 (0.0016)	-0.9043*** (0.2795)	0.3032 (0.3139)	-0.1518*** (0.0455)	0.0509 (0.0523)
Share of Employed Members of HH	-0.4273 (0.3013)	0.2831 (0.3535)	-0.0870 (0.0613)	0.0576 (0.0720)	-0.0764 (0.5943)	0.0203 (0.6880)	-0.0002 (0.0017)	0.0001 (0.0020)	-0.0434 (0.3601)	0.2053 (0.4107)	-0.0073 (0.0605)	0.0345 (0.0689)
Share of Self-employed members of HH	-0.3387 (0.2672)	0.0223 (0.3193)	-0.0690 (0.0543)	0.0045 (0.0650)	-1.4027* (0.8341)	0.8296 (0.9156)	-0.0042* (0.0024)	0.0025 (0.0026)	-0.4379 (0.3866)	0.7022 (0.4277)	-0.0735 (0.0647)	0.1179 (0.0715)
Number of completed grades, respondent	-0.0020 (0.0073)	-0.0008 (0.0090)	-0.0004 (0.0015)	-0.0002 (0.0018)	-0.0334** (0.0161)	0.0575*** (0.0189)	-0.0001** (0.0001)	0.0002*** (0.0001)	0.0051 (0.0078)	0.0103 (0.0094)	0.0009 (0.0013)	0.0017 (0.0016)
Is respondent numerate?	0.3323* (0.1910)	-0.2598 (0.2322)	0.0654* (0.0362)	-0.0506 (0.0431)	1.0613* (0.6035)	-1.0544 (0.6737)	0.0034* (0.0028)	-0.0028 (0.0023)	-0.0513 (0.2189)	0.1913 (0.2581)	-0.0087 (0.0372)	0.0334 (0.0468)
Is respondent employed?	0.4990*** (0.1382)	0.1331 (0.1715)	0.0874*** (0.0204)	0.0273 (0.0356)	6.5067*** (0.8248)	-5.4613*** (0.8894)	0.0597*** (0.0202)	-0.2435*** (0.1163)	0.0639 (0.1453)	-0.1303 (0.1716)	0.0105 (0.0233)	-0.0217 (0.0283)
Constant	-1.1204*** (0.2867)	0.1933 (0.3483)		0.0386 (0.0683)	-9.2092 (0.4997)	5.4224*** (0.4997)		0.1874*** (0.0732)	-2.0945*** (0.3648)	0.2923 (0.4169)		0.0476 (0.0659)
Observations	3630				3630				3630			
Log-likelihood	-1368.2179				-279.0119				-1190.8221			
Pseudo-R2	0.1088				0.2360				0.1635			

Table 13: Time Costs of Administering Financial Services Survey (In Minutes)

	Questionnaire type			Total
	1	2	3	
<i>Banked</i>				
No	41.52	32.15	35.92	36.50
	(22.26)	(14.21)	(15.61)	(18.08)
	[468]	[475]	[479]	[1,422]
Yes	52.75	36.09	42.76	44.32
	(34.89)	(15.97)	(20.50)	(26.45)
	[187]	[158]	[178]	[523]
<i>Formal credit</i>				
No	44.12	33.15	37.50	38.23
	(26.30)	(14.79)	(17.27)	(20.51)
	[613]	[621]	[634]	[1,868]
Yes	53.50	32.08	45.22	47.69
	(34.20)	(13.51)	(17.68)	(28.41)
	[42]	[12]	[23]	[77]
<i>Insurance</i>				
No	41.23	32.95	37.02	36.85
	(22.46)	(14.74)	(17.48)	(18.57)
	[495]	[582]	[579]	[1,656]
Yes	55.55	35.18	43.32	48.65
	(35.51)	(14.99)	(15.09)	(29.37)
	[160]	[51]	[78]	[289]
<i>Total</i>				
	44.73	33.13	37.77	38.60
	(26.94)	(14.76)	(17.32)	(20.95)
	[655]	[633]	[657]	[1,945]

Notes: Means, standard errors (in brackets) and number of observations (in square brackets).

Appendix A

Construction of Indicators from Product-Level Questions

Banked: Q2 ATM card

Q4 Debit Card

Q6 Savings Plus Account

Q8 Current Account

Q10 Savings Account at Bank

Q12 PostBank Account, Post office savings account

Q36 Bank Loan

Q54 Bank Overdraft Facility

Indirect: Q16 Use of someone else's account

Formal Savings: Q6 Savings plus account

Q10 Savings Account at bank

Q12 PostBank Account, Post office savings account

Q14 CDs, treasury bills, notes, money market funds

Q22 Savings w/ regulated MFI

Q24 Savings w/ credit union

Q30 Shares, Investment funds

Q32 Provident fund

Q34 Pensions fund

Informal Savings: Q26 Susu scheme

Q28 Welfare scheme, other savings club (e.g., with religious organization).

Formal Credit: Q36 Bank loan

Q38 Loan from government

Q40 Loan from credit union

Q42 Loan from MFI

Q44 Loan from employer

Informal Credit: Q46 Loan from moneylender

Q48 Welfare scheme, susu, savings club

Q50 Loan from friend, family member

Insurance: Q60 Vehicle

Q62 Property

Q64 Homeowners

Q66 Debts

Q68 Travel

Q70 Life

Q72 Debts if you die

Q74 Disability from employer

Q76 Other disability
Q78 Professional
Q80 Funeral policy w/ institution
Q84 Health/Medical
Q86 Children's education

Table (Appendix B):

	Banked (1)	Indirect access to account (2)	Formal non-bank savings (3)	Informal savings (4)	Formal credit (5)	Informal credit (6)	Insurance (7)
Panel A: Region fixed effects (10 regions)							
Informant = Head of HH	0.0119 (0.0221)	0.0102 (0.0129)	0.0035 (0.0091)	0.0232 (0.0222)	0.0103 (0.0086)	-0.0014 (0.0117)	0.0300* (0.0170)
Informant = Random Non-Head	-0.1605*** (0.0244)	-0.0138 (0.0143)	-0.0072 (0.0101)	0.0113 (0.0246)	-0.0044 (0.0095)	-0.0036 (0.0130)	0.0294 (0.0189)
Observations	1734	1734	1734	1734	1734	1734	1734
Adjusted R2	0.1865	0.0225	0.0235	0.0532	0.0316	0.0236	0.0731
Test of Informant Head = Random							
F-statistic	43.8081	1.9167	0.5130	0.2188	2.9051	0.0349	0.0076
Associated p-value	[0.0000]	[0.1664]	[0.4740]	[0.6400]	[0.0885]	[0.8518]	[0.9303]
Panel B: Enumeration area fixed effects (154 enumeration areas)							
Informant = Head of HH	0.0204 (0.0220)	0.0110 (0.0128)	0.0024 (0.0091)	0.0211 (0.0219)	0.0129 (0.0088)	-0.0061 (0.0117)	0.0299* (0.0165)
Informant = Random Non-Head	-0.1569*** (0.0243)	-0.0104 (0.0141)	-0.0055 (0.0100)	0.0086 (0.0241)	-0.0052 (0.0097)	-0.0035 (0.0129)	0.0282 (0.0181)
Observations	1734	1734	1734	1734	1734	1734	1734
Adjusted R2	0.2274	0.0873	0.0619	0.1260	0.0457	0.0756	0.1767
Test of Informant Head = Random							
F-statistic	43.8081	1.9167	0.5130	0.2188	2.9051	0.0349	0.0076
Associated p-value	[0.0000]	[0.1664]	[0.4740]	[0.6400]	[0.0885]	[0.8518]	[0.9303]

Notes: Marginal effects reported from linear specifications based on the specifications in Table 4. Linear specifications are used to derive unbiased estimates in the presence of fixed effects. Panel A includes 10 region fixed effects and panel B includes 154 enumeration area fixed effects. (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$).

Table (Appendix C):

	Banked	Formal non-bank savings	Informal savings	Formal credit	Informal credit	Insurance
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Marginal effects from probit regressions						
Product	0.0250 (0.0262)	-0.0252 (0.0349)	0.1453** (0.0500)	0.0940*** (0.0207)	0.0051 (0.0070)	0.2855*** (0.0506)
Travel time	-0.0001 (0.0001)	-0.0004** (0.0002)	-0.0011 (0.0007)	-0.0004 (0.0003)	-0.0000 (0.0001)	-0.0016** (0.0008)
Observations	401	401	401	401	401	401
Pseudo-R2	0.1290	0.0743	0.0906	0.1745	0.2096	0.1509
Panel B: Region fixed effects (10 regions)						
Product	0.0152 (0.0105)	0.0090 (0.0105)	0.1004*** (0.0114)	0.0226*** (0.0047)	-0.0024 (0.0048)	0.1346*** (0.0107)
Observations	3630	3630	3630	3630	3630	3630
Adjusted R2	0.3639	0.3369	0.1052	0.0549	0.0148	0.1452
Panel C: Enumeration area fixed effects (154 enumeration areas)						
Product	0.0205** (0.0104)	0.0152 (0.0105)	0.0993*** (0.0114)	0.0234*** (0.0047)	-0.0031 (0.0048)	0.1374*** (0.0102)
Observations	3630	3630	3630	3630	3630	3630
Adjusted R2	0.3973	0.3672	0.1410	0.0857	0.0482	0.2418

Notes: Panel A reports marginal effects from probit specifications similar to the specifications in Table 6 with the additional variable “Travel time.” Panels B and C report marginal effects from linear specifications similar to the ones in Panel A excluding the variable “Travel time.” Linear specifications are used to derive unbiased estimates in the presence of fixed effects. Panel B includes 10 region fixed effects and panel C includes 154 enumeration area fixed effects. (* p< 0.1, ** p<0.05, *** p<0.01).